

Split

Work Order ID 90223-1

\*90223\*

Page 1

Item ID: D3439-101

Accept

\*N9000040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Mirror Assembly 8"

Start Date: 9/14/12 Start Qty: 20.00

\*20\*

Cust Item ID:

Required Date: 10/12/12 Req'd Qty: 20.00

\*20\*

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12-09-17 Tooling:

Date:

Run Start \*NR1\*

QC:

Date: SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID Tool # Plan  
Code Accept Reject Reject Insp.  
Qty Qty Number Stamp

Draw Nbr

Revision Nbr

D3439

Rev B

100

0.00

\*100\*

PURCHASING

0.00

Purchasing

Memo:

Issue P/O:

For Grote Mirror P/N: 12183

Possible Supplier: UAP/NAPA

Material release note is required

110

Receive & Inspect for Damage & Mat'l Certs

0.00

\*110\*

Packaging

Memo:

0.00

Packaging

Ensure Material Release Note is attached

115

QC6- Inspect dimensions to drawing

0.00

\*115\*

QC

Memo:

0.00

Quality Control

12/09/17 (20)

12/11/19 (20)

DAS  
10  
12/09/17



# Work Order ID 90223

September-14-12 9:53:30 AM

\*90223\*

Page 2

Item ID: D3439-101

Accept

\*N900040100\*

Setup Start

\*NS1\*

Revision ID:

Stop

\*NS2\*

Item Name: Mirror Assembly 8"

Start Date: 9/14/12

Start Qty: 20.00

\*20\*

Cust Item ID:

Required Date: 10/12/12

Req'd Qty: 20.00

\*20\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

120

\*120\*

Small Fab

Small Fab

Small Fab

Memo

0.00

0.00

1- Discard Hardware.

2- Drill and Tap mirror as per Dwg using DT9670, then install stud as per dwg

3- Plug drain holes with Sikaflex

Ensure that mirror adheres to housing

Pick:

Qty Part Number Description Batch

A/RN/A Sikaflex-241/-291

Sikaflex expiry date 13/06/22

M123914

130

\*130\*

QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

0.00

Memo

13.2.1

stock

st 229

13/02/01

(J)



NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|                   |   |  |                                    |  |                                      |
|-------------------|---|--|------------------------------------|--|--------------------------------------|
| Work Order: _____ | <b>DISPOSITION</b><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b>      |                                    |  |                                      |
| Part No. _____    |   | Skid-tube <input type="checkbox"/>     | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/>           | Engineering <input type="checkbox"/> |
| NCR No. _____     |   | Machining <input type="checkbox"/>     | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/>   | Quality <input type="checkbox"/>     |
|                   |   | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/>       |
|                   |   | Large Fab <input type="checkbox"/>     | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/>            |                                      |

| Root Cause    | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Setup         |      |      |     |   |                   |                    |             |              |              |
| Other         |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

## FAULT CATEGORY

| Landing Gear  | General                                 |  |
|---|---|--|
| <input type="checkbox"/> Bending                      | <input type="checkbox"/> Bend           | <input type="checkbox"/> Grain                           |
| <input type="checkbox"/> Centre Not Concentric to O/S | <input type="checkbox"/> BOM/Route      | <input type="checkbox"/> Hardware                        |
| <input type="checkbox"/> Cracks                       | <input type="checkbox"/> Broken/Damaged | <input type="checkbox"/> Inspection incomplete           |
| <input type="checkbox"/> Crushed/Crimped              | <input type="checkbox"/> Burrs          | <input type="checkbox"/> Instructions Incomplete/Unclear |
| <input type="checkbox"/> Cuffs                        | <input type="checkbox"/> Contamination  | <input type="checkbox"/> Maintenance                     |
| <input type="checkbox"/> Heat Treat                   | <input type="checkbox"/> Countersink    | <input type="checkbox"/> Mislabeled                      |
| <input type="checkbox"/> Inspection Strip in Tube     | <input type="checkbox"/> Cut Too Short  | <input type="checkbox"/> Misread                         |
| <input type="checkbox"/> Ripples in Bend              | <input type="checkbox"/> Drill Holes    | <input type="checkbox"/> Offset                          |
| <input type="checkbox"/> Torque Waves in Extrusion    | <input type="checkbox"/> Drawing        | <input type="checkbox"/> Out of Calibration              |
| <input type="checkbox"/> Turning Sequence             | <input type="checkbox"/> Finish         | <input type="checkbox"/> Out of Sequence                 |
| <input type="checkbox"/> Wave/Twist in Tube           | <input type="checkbox"/> Folio          | <input type="checkbox"/> Outside Dimensions              |
|   |   | <input type="checkbox"/> Ovalized                        |
|   |   | <input type="checkbox"/> Over/Under tolerance            |
|   |   | <input type="checkbox"/> Part Incorrect                  |
|   |   | <input type="checkbox"/> Part Lost/Missing               |
|   |   | <input type="checkbox"/> Part Moved                      |
|   |   | <input type="checkbox"/> Positioned Wrong                |
|   |   | <input type="checkbox"/> Power Loss/Surge                |
|   |   | <input type="checkbox"/> Pressure/Forced                 |
|   |   | <input type="checkbox"/> Temperature/Cure                |
|   |   | <input type="checkbox"/> Weld                            |
|   |   | <input type="checkbox"/> Wrong Stock Pulled              |
|   |   | <input type="checkbox"/> Other                           |

**Work Order ID 90223**

Friday, February 01, 2013 11:07:31 AM

**\*90223\***

Page 3

Item ID: D3439-101

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Item Name: Mirror Assembly 8"

Stop **\*NS2\***

Start Date: 9/14/2012 Start Qty: 20.00

**\*20\***

Cust Item ID:

Required Date: 10/12/2012 Req'd Qty: 20.00

**\*20\***

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

140

Identify as per dwg &amp; Stock Location: \_\_\_\_\_

0.00

**\*140\***

Packaging

Memo

0.00

Packaging

150

QC21- Final Inspection - Work Order Release

0.00

**\*150\***

QC

Memo

0.00

Quality Control

MLJ 13-02-01

13-02-01





# Picklist Print

September-14-12 9:53:29 AM

Page 1

Work Order ID: 90223  
Parent Item: D3439-101  
Parent Item Name: Mirror Assembly 8"

Start Date: 9/14/12  
Start Qty: 20.00

Required Date: 10/12/12  
Required Qty: 20.00

Comments: IPP A05.07.20New issueKJ/JLM ver:ec IPP Rev:B 10.09.08 per dwg RevB DD

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand  | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|-----------------|-------------|--------------|---------------|----------------|--------|
| 12183<br>GROTE MIRROR           |                        | Purchased     | No          |                     |                  | 120             | Each               | 20.0000         | 1           | 20           |               | 12/5/15 90223  |        |
|                                 |                        |               |             | <u>Location</u>     |                  | <u>Loc Qty</u>  |                    | <u>Loc Code</u> |             |              |               |                |        |
|                                 |                        |               |             | ST                  |                  | 20              |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | 86978               |                  | 20              |                    |                 |             |              |               |                |        |
| D3015-3<br>Locknut              |                        | Manufactured  | No          |                     |                  | 120             | Each               | 332.0000        | 1           | 20           |               | 9/13/01/31     |        |
|                                 |                        |               |             | <u>Location</u>     |                  | <u>Loc Qty</u>  |                    | <u>Loc Code</u> |             |              |               |                |        |
|                                 |                        |               |             | ST023               |                  | 332             |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | 78314               |                  | 38              |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | 83565               |                  | 294             |                    |                 |             |              |               |                |        |
| D3439-3<br>Stud                 |                        | Manufactured  | No          |                     |                  | 120             | Each               | 50.0000         | 1           | 20           |               | 9/13/01/31     |        |
|                                 |                        |               |             | <u>Location</u>     |                  | <u>Loc Qty</u>  |                    | <u>Loc Code</u> |             |              |               |                |        |
|                                 |                        |               |             | GA                  |                  | 50              |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | 77048               |                  | 6               |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | 83077               |                  | 44              |                    |                 |             |              |               |                |        |
| NAS1149C0563R<br>Washer         |                        | Purchased     | No          |                     |                  | 120             | Each               | 328.0000        | 1           | 20           |               | 9/13/01/31     |        |
|                                 |                        |               |             | <u>Location</u>     |                  | <u>Loc Qty</u>  |                    | <u>Loc Code</u> |             |              |               |                |        |
|                                 |                        |               |             | ST296               |                  | 200             |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | 120422              |                  | 200             |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | ST297               |                  | 128             |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | 116391              |                  | 8               |                    |                 |             |              |               |                |        |
|                                 |                        |               |             | 117460              |                  | 120             |                    |                 |             |              |               |                |        |

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|                   |   |   |  |  |  |
|-------------------|---|---|--|--|--|
| Work Order: _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br>Skid-tube <input type="checkbox"/> Crosstube <input type="checkbox"/> Water Jet <input type="checkbox"/> Engineering <input type="checkbox"/><br>Machining <input type="checkbox"/> Small Fab <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Quality <input type="checkbox"/><br>Thermoforming <input type="checkbox"/> Finishing <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Other <input type="checkbox"/><br>Large Fab <input type="checkbox"/> Composite <input type="checkbox"/> Supplier <input type="checkbox"/> |  |  |  |
| Part No. _____    |   |   |  |  |  |
| NCR No. _____     |   |   |  |  |  |
|                   |   |   |  |  |  |

| Root Cause    | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Setup         |      |      |     |   |                   |                    |             |              |              |
| Other         |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

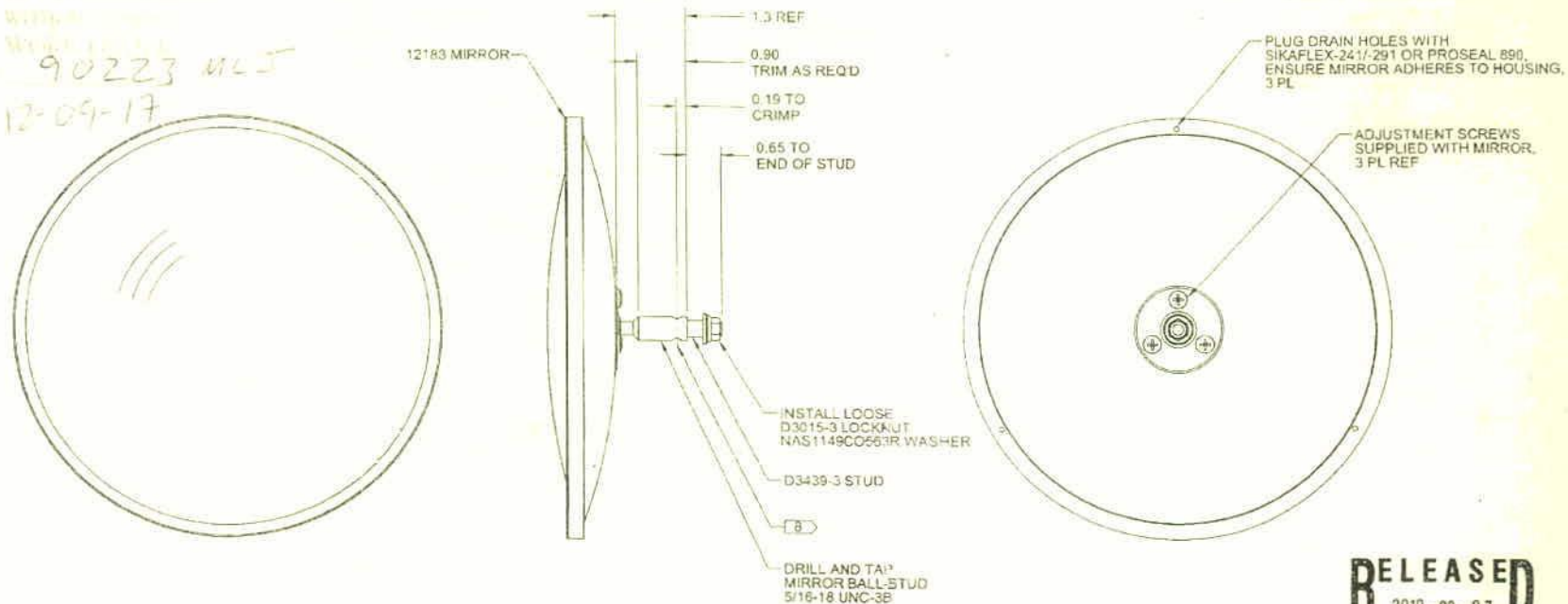
**FAULT CATEGORY**

| Landing Gear  | General                                 |  |
|---|---|--|
| <input type="checkbox"/> Bending                      | <input type="checkbox"/> Bend           | <input type="checkbox"/> Grain                           |
| <input type="checkbox"/> Centre Not Concentric to O/S | <input type="checkbox"/> BOM/Route      | <input type="checkbox"/> Hardware                        |
| <input type="checkbox"/> Cracks                       | <input type="checkbox"/> Broken/Damaged | <input type="checkbox"/> Inspection incomplete           |
| <input type="checkbox"/> Crushed/Crimped              | <input type="checkbox"/> Burrs          | <input type="checkbox"/> Instructions Incomplete/Unclear |
| <input type="checkbox"/> Cuffs                        | <input type="checkbox"/> Contamination  | <input type="checkbox"/> Maintenance                     |
| <input type="checkbox"/> Heat Treat                   | <input type="checkbox"/> Countersink    | <input type="checkbox"/> Misabeled                       |
| <input type="checkbox"/> Inspection Strip in Tube     | <input type="checkbox"/> Cut Too Short  | <input type="checkbox"/> Misread                         |
| <input type="checkbox"/> Ripples in Bend              | <input type="checkbox"/> Drill Holes    | <input type="checkbox"/> Offset                          |
| <input type="checkbox"/> Torque Waves in Extrusion    | <input type="checkbox"/> Drawing        | <input type="checkbox"/> Out of Calibration              |
| <input type="checkbox"/> Turning Sequence             | <input type="checkbox"/> Finish         | <input type="checkbox"/> Out of Sequence                 |
| <input type="checkbox"/> Wave/Twist in Tube           | <input type="checkbox"/> Folio          | <input type="checkbox"/> Outside Dimensions              |
|   |   | <input type="checkbox"/> Ovalized                        |
|   |   | <input type="checkbox"/> Over/Under tolerance            |
|   |   | <input type="checkbox"/> Part Incorrect                  |
|   |   | <input type="checkbox"/> Part Lost/Missing               |
|   |   | <input type="checkbox"/> Part Moved                      |
|   |   | <input type="checkbox"/> Positioned Wrong                |
|   |   | <input type="checkbox"/> Power Loss/Surge                |
|   |   | <input type="checkbox"/> Pressure/Forced                 |
|   |   | <input type="checkbox"/> Temperature/Cure                |
|   |   | <input type="checkbox"/> Weld                            |
|   |   | <input type="checkbox"/> Wrong Stock Pulled              |
|   |   | <input type="checkbox"/> Other                           |



| ITEM | QTY | P/N           | DESCRIPTION            |
|------|-----|---------------|------------------------|
| 1    | X   | D3439-101     | MIRROR ASSEMBLY, 8"    |
| 2    | 1   | 12183         | MIRROR 8" (GROTE)      |
| 3    | 1   | D3015-3       | LOCKNUT                |
| 4    | 1   | D3439-3       | STUD                   |
| 5    | 1   | NAS1149CO563R | WASHER (OR AN960J0516) |

90223 MJS  
12-09-17



### D3439-101 MIRROR ASSEMBLY

#### NOTES:

- 1) MATERIAL: MIRROR= 8" ROUND CONVEX MIRROR W/ STAINLESS STEEL CASE  
CENTER-MOUNT BALL-STUD W/ 1/4-20 X 1" DEEP FEMALE THREAD  
GROTE INDUSTRIES, 2600 LANIER DRIVE, MADISON, INDIANA 47250
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3439-101" USING REMOVEABLE TAG
- 7) WEIGHT: 1.18 lbs
- 8) TO INSTALL D3439-3 STUD:
  - APPLY LOCKTITE 262 TO THREADS BEING INSTALLED INTO MIRROR BALL-STUD
  - THREAD D3439-3 STUD INTO MIRROR BALL-STUD
  - CRIMP MIRROR BALL-STUD ON OPPOSING SIDES, 0.19 FROM END AS ILLUSTRATED USING TOOL DT8317
  - CRIMP TO DEPTH OF 0.015-0.030 USING R0.125

RELEASED  
2010-09-07

|            |  |    |          |
|------------|--|----|----------|
| B          | REDRAW ADD 3 (WAS PURCHASED/TRIMMED BOLT). RMV LPS | CP | 10.07.20 |
| A          | NEW ISSUE  | CP | 05.05.27 |
| REV.       | DESCRIPTION  | BY | DATE     |
| DESIGN     |  |    |          |
| DRAWN      |  |    |          |
| CHECKED    |  |    |          |
| MFG. APPR. |  |    |          |
| APPROVED   |  |    |          |
| DE APPR.   |  |    |          |
| DATE       | 10.07.20   |    |          |

DART AEROSPACE LTD  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D3439 REV. B  
SHEET 1 OF 2  
TITLE MIRROR ASSEMBLY SCALE NTS

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NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

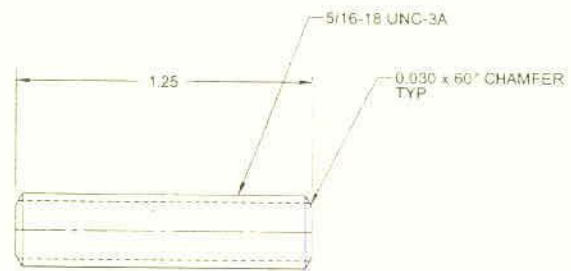
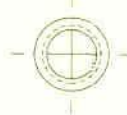
DQA: \_\_\_\_\_ Date: \_\_\_\_\_


QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|  |      |      |     |  |                   |                    |             |              |              |  |  |
|--|------|------|-----|--|-------------------|--------------------|-------------|--------------|--------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____   |      |      |     | <b>DISPOSITION</b><br><br><div style="display: flex; justify-content: space-around;"> <div> <input type="checkbox"/> Rework<br/> <input type="checkbox"/> Scrap<br/> <input type="checkbox"/> Use-as-is<br/> <input type="checkbox"/> Work Order Update         </div> <div> <input type="checkbox"/> Skid-tube<br/> <input type="checkbox"/> Machining<br/> <input type="checkbox"/> Thermoforming<br/> <input type="checkbox"/> Large Fab         </div> <div> <input type="checkbox"/> Crosstube<br/> <input type="checkbox"/> Small Fab<br/> <input type="checkbox"/> Finishing<br/> <input type="checkbox"/> Composite         </div> <div> <input type="checkbox"/> Water Jet<br/> <input type="checkbox"/> Prod. Eng. Coord.<br/> <input type="checkbox"/> Rec/Store/Packaging<br/> <input type="checkbox"/> Supplier         </div> <div> <input type="checkbox"/> Engineering<br/> <input type="checkbox"/> Quality<br/> <input type="checkbox"/> Other         </div> </div> |                   |                    |             |              |              |  |  |
| <b>Root Cause</b>  | Date | Step | Qty | Description of work order update or Non-conformance  | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |  |  |
| <input type="checkbox"/> Doc/Data<br><input type="checkbox"/> Equip/Tooling<br><input type="checkbox"/> Operator<br><input type="checkbox"/> Material<br><input type="checkbox"/> Setup<br><input type="checkbox"/> Other<br><input type="checkbox"/> Process<br><input type="checkbox"/> Supplier<br><input type="checkbox"/> Training<br><input type="checkbox"/> Unapproved |      |      |     |  |                   |                    |             |              |              |  |  |

| FAULT CATEGORY  |   |  |   |   |  |  |  |  |  |
|---|---|--|---|---|--|--|--|--|--|
| <b>Landing Gear</b>                                   |   |  | <b>General</b>                                |   |  |  |  |  |  |
| <input type="checkbox"/> Bending                      | <input type="checkbox"/> Bend           | <input type="checkbox"/> Grain                           | <input type="checkbox"/> Ovalized             | <input type="checkbox"/> Pressure/Forced    |  |  |  |  |  |
| <input type="checkbox"/> Centre Not Concentric to O/S | <input type="checkbox"/> BOM/Route      | <input type="checkbox"/> Hardware                        | <input type="checkbox"/> Over/Under tolerance | <input type="checkbox"/> Temperature/Cure   |  |  |  |  |  |
| <input type="checkbox"/> Cracks                       | <input type="checkbox"/> Broken/Damaged | <input type="checkbox"/> Inspection incomplete           | <input type="checkbox"/> Part Incorrect       | <input type="checkbox"/> Weld               |  |  |  |  |  |
| <input type="checkbox"/> Crushed/Crimped              | <input type="checkbox"/> Burrs          | <input type="checkbox"/> Instructions Incomplete/Unclear | <input type="checkbox"/> Part Lost/Missing    | <input type="checkbox"/> Wrong Stock Pulled |  |  |  |  |  |
| <input type="checkbox"/> Cuffs                        | <input type="checkbox"/> Contamination  | <input type="checkbox"/> Maintenance                     | <input type="checkbox"/> Part Moved           |   |  |  |  |  |  |
| <input type="checkbox"/> Heat Treat                   | <input type="checkbox"/> Countersink    | <input type="checkbox"/> Mislabeled                      | <input type="checkbox"/> Positioned Wrong     |   |  |  |  |  |  |
| <input type="checkbox"/> Inspection Strip in Tube     | <input type="checkbox"/> Cut Too Short  | <input type="checkbox"/> Misread                         | <input type="checkbox"/> Power Loss/Surge     | <input type="checkbox"/> Other              |  |  |  |  |  |
| <input type="checkbox"/> Ripples in Bend              | <input type="checkbox"/> Drill Holes    | <input type="checkbox"/> Offset                          |   |   |  |  |  |  |  |
| <input type="checkbox"/> Torque Waves in Extrusion    | <input type="checkbox"/> Drawing        | <input type="checkbox"/> Out of Calibration              |   |   |  |  |  |  |  |
| <input type="checkbox"/> Turning Sequence             | <input type="checkbox"/> Finish         | <input type="checkbox"/> Out of Sequence                 |   |   |  |  |  |  |  |
| <input type="checkbox"/> Wave/Twist in Tube           | <input type="checkbox"/> Folio          | <input type="checkbox"/> Outside Dimensions              |   |   |  |  |  |  |  |



D3439-3 STUD 

**RELEASED**  
2010-09-07

**NOTES:**

- 1) MATERIAL: AISI 303 STAINLESS STEEL ROUND BAR PER ASTM A582  
REF DART SPEC M303R
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.03 lbs

|           |   |   |              |
|-----------|---|---|--------------|
| DESIGN    |   | <b>DART AEROSPACE LTD</b>   |              |
| DRAWN     |  | HAWKESBURY, ONTARIO, CANADA   |              |
| CHECKED   |   | DRAWING NO.   | REV. B       |
| MFG. APPR |  | D3439   | SHEET 2 OF 2 |
| APPROVED  |  | TITLE   | SCALE        |
| DE APPR   |   | MIRROR ASSEMBLY   | NTS          |
| DATE      | 10.07.20  | <small>COPYRIGHT © 2010 BY DART AEROSPACE LTD.<br/>THIS DOCUMENT CONTAINS AND CONVEYS INFORMATION SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT<br/>WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> |              |



NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|  |      |      |     |   |                   |   |             |              |              |  |
|--|------|------|-----|---|-------------------|---|-------------|--------------|--------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |      |      |     | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> |                   | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Crosstube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |             |              |              |  |
| Root Cause   | Date | Step | Qty | Description of work order update or Non-conformance   | Initial Chief Eng | Action Description  | Sign & Date | Verification | QC Inspector |  |
| Doc/Data   |      |      |     |   |                   |   |             |              |              |  |
| Equip/Tooling  |      |      |     |   |                   |   |             |              |              |  |
| Operator   |      |      |     |   |                   |   |             |              |              |  |
| Material   |      |      |     |   |                   |   |             |              |              |  |
| Setup  |      |      |     |   |                   |   |             |              |              |  |
| Other  |      |      |     |   |                   |   |             |              |              |  |
| Process  |      |      |     |   |                   |   |             |              |              |  |
| Supplier   |      |      |     |   |                   |   |             |              |              |  |
| Training   |      |      |     |   |                   |   |             |              |              |  |
| Unapproved   |      |      |     |   |                   |   |             |              |              |  |

| FAULT CATEGORY  |   |   |   |  |
|---|---|---|---|--|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric to O/S<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crushed/Crimped<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Ripples in Bend<br><input type="checkbox"/> Torque Waves in Extrusion<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damaged<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Folio | <input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Maintenance<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Offset<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence<br><input type="checkbox"/> Outside Dimensions | <input type="checkbox"/> Ovalized<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge<br><br><input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><br><input type="checkbox"/> Other |  |



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID **PO17917**

Purchase Order Date 9/17/12

PO Print Date 9/17/12

Page Number 1 of 1

Order From :

VC-UAP001

UAP HAWKESBURY INC. #074  
514 MAIN STREET WEST  
HAWKESBURY, ON K6A 2J2  
CA

Contact Name

Vendor Phone 613 632 8575

Vendor Fax 613 632 1539

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr

10127-2607

Terms

Net 30

Currency

CAD

FOB

Destination-Collect

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**FAXED**  
9/17/12

| Line Nbr | Reference<br>Revision ID<br>Vendor Part Number | Description/<br>Mfg ID | Req Date/<br>Taxable | Req Qty/<br>Unit of Measure | Ship Method | Unit Price | Extended<br>Price |
|----------|--|------------------------|----------------------|-----------------------------|-------------|------------|-------------------|
| 1        | 12183  | GROTE MIRROR           | 9/19/12<br>Yes       | 20.00<br>Each               | Yours ppd   | \$21.4900  | \$429.80          |

Special Inst: AS PER DWG D3439 REV. B  
B90223  
GROTE P/N: 12183

PO Total: \$429.80

CERTIFICATE OF CONFORMITY  
REQ'D UPON DELIVERY

Change Nbr: 1

Change Date: 9/17/12

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required - YES NO



NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|                   |   |  |                                    |  |                                      |
|-------------------|---|--|------------------------------------|--|--------------------------------------|
| Work Order: _____ | <b>DISPOSITION</b><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b>      |                                    |  |                                      |
| Part No. _____    |   | Skid-tube <input type="checkbox"/>     | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/>           | Engineering <input type="checkbox"/> |
| NCR No. _____     |   | Machining <input type="checkbox"/>     | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/>   | Quality <input type="checkbox"/>     |
|                   |   | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/>       |
|                   |   | Large Fab <input type="checkbox"/>     | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/>            |                                      |

| Root Cause    | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Setup         |      |      |     |   |                   |                    |             |              |              |
| Other         |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

## FAULT CATEGORY

|   |   |   |  |   |
|---|---|---|--|---|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric to O/S<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crushed/Crimped<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Ripples in Bend<br><input type="checkbox"/> Torque Waves in Extrusion<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damaged<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Folio | <input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection incomplete<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Maintenance<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Offset<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence<br><input type="checkbox"/> Outside Dimensions | <input type="checkbox"/> Ovalized<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other _____ |
|---|---|---|--|---|





HAWKESBURY AUTO PARTS INC 55808074  
514 MAIN STREET WEST  
HAWKESBURY, ONT. K6A 2J2  
TEL: 613-8575 FAX: 613-1535

PERMIT  
DANGEROUS GOODS  
EXPIRY DATE:  
PERMIS RELATIF AUX MARCHANDISES DANGEREUSES  
DATE D'EXPIRATION:  
EMERGENCY TELEPHONE NUMBER 24 HOURS  
CANUTEC 613-996-6666  
NUMÉRO DE TÉLÉPHONE D'URGENCE 24 HEURES  
CANUTEC 613-996-6666

| ACCT #<br>N° COMPTE    | SOLD TO / VENDU À  | DATE   | TIME<br>HEURE        | STORE #<br>N° MAGASIN | EMP #<br>N° EMPL. | INVOICE NO.<br>N° FACTURE |
|------------------------|--|--|----------------------|-----------------------|-------------------|---------------------------|
| 1301                   | DART AEROSPACE LTD<br>1570 ABERDEEN STREET<br>HAWKESBURY, ONTARIO<br>K6A 1K2 | 9/17/12  | 10:53                | 060004074             | 28                | 374250                    |
| SR #                   |  | PURCHASE ORDER #<br>N° BON DE COMMANDE         |                      |                       |                   | ATTENTION                 |
| 61                     |  | 17917  |                      |                       |                   |                           |
| AD                     |  | TAX EXEMPTION:<br>EXEMPTION DE TAXE: 6122-5207 |                      |                       |                   |                           |
| 13                     |  | TERMS:<br>CONDITIONS: NET 30 DAYS              |                      |                       |                   | CHARGE SALE               |
|                        |  | DELIVERY:<br>LIVRAISON:                        |                      |                       |                   |                           |
| PART NUMBER / N° PIÈCE | LN   | DESCRIPTION                                    | QUANTITY<br>QUANTITE | PRICE / PRIX          | NET               | TOTAL                     |
| 121538                 |  | 3RD CONVEY MIRROR                              | 20.00                | 32.570                | 651.420           | 425.91                    |
| 121538                 |  | 12 IPY ✓                                       |                      |                       |                   |                           |
| 121538                 |  | EX STL ✓                                       |                      |                       |                   |                           |
| 121538                 |  | BY TIE UP CAMBRIDGE ✓                          |                      |                       |                   |                           |
|                        |  | Lex ✓  |                      |                       |                   |                           |
|                        |  | addy   |                      |                       |                   |                           |
|                        |  | Sonia Hoffe                                    |                      |                       |                   |                           |

REFUNDED BY \_\_\_\_\_

Subtotal

425.91

Tax 13% ON HARMONIZED

55.37

Tax 0%

0.00

VERIFIED BY \_\_\_\_\_

### SIGNATURE

TOTAL ----- CHARGE SALE

ALL GOODS RETURNED MUST BE ACCOMPANIED BY THIS INVOICE  
TOUTE MARCHANDISE RETOURNÉE DOIT ÊTRE ACCOMPAGNÉE DE CETTE FACTURE

NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|  |   |  |                                      |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
|--|---|--|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>  | Water Jet <input type="checkbox"/>   | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>  | Prod. Eng. Coord. <input type="checkbox"/>   | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>  | Rec/Store/Packaging <input type="checkbox"/>   | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>  | Supplier <input type="checkbox"/>  |                                      |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |

| Root Cause    | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Setup         |      |      |     |   |                   |                    |             |              |              |
| Other         |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

## FAULT CATEGORY

| Landing Gear  | General  |
|---|--|
| <input type="checkbox"/> Bending                      | <input type="checkbox"/> Bend                            |
| <input type="checkbox"/> Centre Not Concentric to O/S | <input type="checkbox"/> BOM/Route                       |
| <input type="checkbox"/> Cracks                       | <input type="checkbox"/> Broken/Damaged                  |
| <input type="checkbox"/> Crushed/Crimped              | <input type="checkbox"/> Burrs                           |
| <input type="checkbox"/> Cuffs                        | <input type="checkbox"/> Contamination                   |
| <input type="checkbox"/> Heat Treat                   | <input type="checkbox"/> Countersink                     |
| <input type="checkbox"/> Inspection Strip in Tube     | <input type="checkbox"/> Cut Too Short                   |
| <input type="checkbox"/> Ripples in Bend              | <input type="checkbox"/> Drill Holes                     |
| <input type="checkbox"/> Torque Waves in Extrusion    | <input type="checkbox"/> Drawing                         |
| <input type="checkbox"/> Turning Sequence             | <input type="checkbox"/> Finish                          |
| <input type="checkbox"/> Wave/Twist in Tube           | <input type="checkbox"/> Folio                           |
|   | <input type="checkbox"/> Grain                           |
|   | <input type="checkbox"/> Hardware                        |
|   | <input type="checkbox"/> Inspection incomplete           |
|   | <input type="checkbox"/> Instructions Incomplete/Unclear |
|   | <input type="checkbox"/> Maintenance                     |
|   | <input type="checkbox"/> Mislabeled                      |
|   | <input type="checkbox"/> Misread                         |
|   | <input type="checkbox"/> Offset                          |
|   | <input type="checkbox"/> Out of Calibration              |
|   | <input type="checkbox"/> Out of Sequence                 |
|   | <input type="checkbox"/> Outside Dimensions              |
|   | <input type="checkbox"/> Ovalized                        |
|   | <input type="checkbox"/> Over/Under tolerance            |
|   | <input type="checkbox"/> Part Incorrect                  |
|   | <input type="checkbox"/> Part Lost/Missing               |
|   | <input type="checkbox"/> Part Moved                      |
|   | <input type="checkbox"/> Positioned Wrong                |
|   | <input type="checkbox"/> Power Loss/Surge                |
|   | <input type="checkbox"/> Pressure/Forced                 |
|   | <input type="checkbox"/> Temperature/Cure                |
|   | <input type="checkbox"/> Weld                            |
|   | <input type="checkbox"/> Wrong Stock Pulled              |
|   | <input type="checkbox"/> Other                           |